

# The Effect of Administration of Ginger Decil Water on Reduce the Levels of Disminore Pain in Adolescent Women at SMAN 03 Bengkulu City

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## Abstract

Dysmenorrhea is pain during menstruation where almost more than 50% of women experience it. Women in Indonesia who experience dysmenorrhea mostly overcome it by taking painkillers which can lead to dependence and negative effects. The purpose of this research is to study the effect of giving ginger water decoction to reducing the level of dysmenorrhea pain in young women in SMAN 03 Bengkulu City. This study uses a quasi-experimental approach with designone Group pre and post-test design. The population in this study were 122 students of SMA Negeri 03 Bengkulu City, grades X and XI who experienced dysmenorrhea. Sampling in this study used a purposive sampling technique of 16 female students. The data used is primary data. Data were analyzed using univariate and bivariate analysis with the Shapiro Wilk test and Wilcoxon Sign Rank test. The results of the study were obtained from 16 samples the average value of pain for the sample group before being given ginger decoction was 4.38 and for the group after being given ginger decoction was 3.38. Analysis results Wilcoxon Sign Rank Test obtained a value of  $z = -5.85$  with a value of  $p = 0.000 < \alpha = 0.05$ , so it was found that there was an effect of giving ginger water decoction to reducing the level of dysmenorrhea pain in young women at SMAN 03 Bengkulu City. It is hoped that the school can work together with health workers in providing information about the benefits of ginger water decoction for menstrual pain, so that students' knowledge increases and can reduce dysmenorrhea pain when menstruation occurs.

## A. Introduction

Adolescence is a stage of development between childhood and adulthood during which there is fast growth, including the development of the reproductive system, which affects changes in physical, mental, and social functions. Menstruation is one symptom that young women are starting puberty (Fatmawati et al., 2022; Hakim & Kadarullah, 2016; Tulus et al., 2014).

Menstrual discomfort, also known as dysmenorrhea, is a common issue that appears along with the onset of menstruation and is most frequently encountered by women. Dysmenorrhea is lower abdominal pain that can occasionally go to the thighs and waist. This discomfort lasts for few hours to many days and happens before or during menstruation (Maidartati et al., 2018; Natalia et al., 2020; Zuhra et al., 2022). Dysmenorrhea occurs due to contractions of the smooth muscles in the uterus and due to the presence of excessive amounts of prostaglandins in menstrual blood, which stimulate uterine hyperactivity and uterine muscle spasms (Hutagalung et al., 2022; Nida & Sari, 2016; Sihombing et al., 2022).

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The prevalence of dysmenorrhea is relatively high worldwide. On average, over 50% of women are affected by it. According to study, dysmenorrhea affects over 60% of working-age women in the United States, 60% in Sweden, 72% in Western Australia, 44% in China, and 80% in Western Australia. In Indonesia, however, the prevalence of dysmenorrhea was shown to be around 55%.

According to the kind of dysmenorrhea, primary and secondary dysmenorrhea, the causes of menstruation discomfort or dysmenorrhea are separated into two categories. In the absence of pelvic disease, prostaglandin-induced myometrial contraction leads to primary dysmenorrhea. While underlying illness or anatomical abnormalities either inside or outside the uterus are the primary causes of secondary dysmenorrhea, other factors include pelvic disease, ovarian cysts, uterine infections, endometriosis (inflammation of the uterine lining), and intrauterine devices (Aulya et al., 2021; Kostania & Kurniawati, 2016; Munthe & Harahap, 2021).

In Indonesia, women with dysmenorrhea typically treat it with painkillers, however this practice has drawbacks because long-term, continuous use of these drugs can lead to drug dependence and have detrimental effects on health. In addition to medication, appropriate rest, consistent exercise, massage, and warm compresses can all help to lessen discomfort. Additionally, medicinal plants like ginger, turmeric, carrots, and green coconut water can be used to relieve menstruation pain.

According to research Kostania & Kurniawati (2016) entitled Differences in the effectiveness of ginger extract with turmeric extract in reducing primary dysmenorrhea pain in female students at the Midwifery Dormitory of the Surakarta Health Polytechnic stated that ginger contains gingerols and shogaols which can inhibit cyclooxygenase and lipoxygenase enzymes in the synthesis of prostaglandins and leukotrienes.

Ginger has anti-inflammatory compounds that can also prevent prostaglandin formation. This is the main mechanism underlying gingerol's ability to ease menstrual discomfort. Drinks containing either ginger extract or turmeric extract can both lower the main dysmenorrhea pain scale, however ginger extract drinks are more successful at doing so than turmeric extract (Sari & Mareta, 2020).

A beverage produced with ginger as the primary ingredient is known as ginger water boiling drink. Ginger is thought to naturally contain compounds that have analgesic, antipyretic, and anti-inflammatory properties (Kuminah et al., 2023; Sugiharti & Sukmaningtyas, 2021). When ingested by humans, ginger has a healthy and non-toxic amount of curcumin 150 mg daily is the recommended dose.

Data obtained from the National Education Office of Bengkulu Province, the highest number of students from 12 public high schools in Bengkulu City were in Bengkulu City 7 State High School with 614 students, Bengkulu City 4 State Senior High School with 584 students, Bengkulu City 2 Public High School with 581 students, Senior High School State 1 as many as 573 and SMA Negeri 3 Bengkulu City as many as 572 students.

An initial survey conducted on February 28 2019 at 5 high schools in Bengkulu City based on data from the 2018 School Health Unit, found that young girls experienced dysmenorrhea, namely at SMA Negeri 7 Bengkulu City with 18 cases (7.7%), SMA Negeri 4 Bengkulu City with 9 cases (6.8%), Bengkulu City 2 Public High School with 62 cases (29.1%), Bengkulu City 1 Public High School 40 cases (19.4%), Bengkulu City 3 Public High School with 64 cases (36 ,8%).

Based on the initial survey, it was found that the students who experienced dysmenorrhea were mostly students at SMA Negeri 03 Bengkulu City. According to the results of the initial survey, SMA Negeri 03 Bengkulu City students made up the majority of the students who had dysmenorrhea. In the initial survey, which was carried out at SMA Negeri 03 Bengkulu City, 10 female students who had dysmenorrhea were interviewed. Five of the students treated their dysmenorrhea by taking medication, three of the students treated their dysmenorrhea by taking it easy at home, and two of the female students treated their dysmenorrhea by applying warm compresses.

Formulation of the problem in this research is "Is there an effect of giving ginger water decoction to reducing the level of dysmenorrhea pain in young women at SMAN 03 Bengkulu City?". The aim of this research is to study the effect of giving ginger water decoction to reducing dysmenorrhea pain levels in young women at SMAN 03 Bengkulu City.

## B. Research Methods

This study was carried out at SMAN 03 in Bengkulu City. The research was conducted from May 28 to June 28, 2019. One group underwent pre- and post-testing as part of the quasi-experimental research design. All 122 class X and XI students from SMA Negeri 03 Bengkulu City who had dysmenorrhea made up the study's population. Technique Purposive sampling was used in this study's sample process. Techniques for collecting data from original sources. Techniques for data analysis employing bivariate and univariate analysis. The Wilcoxon Signed Ranks Test was employed in the bivariate analysis of this study to examine the impact of administering cooked ginger water on the incidence of dysmenorrhea at SMA Negeri 03 Bengkulu City. Prior to conducting a bivariate analysis, a Shapiro-Wilk test was used to determine whether the data met the criteria for a normal distribution if the p-value was less than 0.05.

## C. Result and Discussion

### *Data Normality Test*

Based on the test results, this data normality test is carried out to find out whether the data is normally distributed or not by testing *Shapiro-Wilk* as follows:

**Table 1.** Results of *Shapiro-Wilk*

<b>Treatment</b>	<b>Kolmogorov-Smirnova</b>			<b>Shapiro-Wilk</b>		
	<b>Statistics</b>	<b>df</b>	<b>Sig.</b>	<b>Statistics</b>	<b>df</b>	<b>Sig.</b>
Pretest Pain Levels	.289	16	.001	.869	16	.027
Posttest Pain Level	.289	16	.001	.869	16	.027

From the results of the normality test above, a significant value was obtained in the Shapiro-Wilk test with sig. (p) = 0.027 <  $\alpha$  = 0.05 for the data group before being given ginger boiled water and sig. (p) = 0.027 < 0.05 for the data group after being given ginger boiled water. So, all data is declared not normally distributed. So that it does not meet the requirements for the t test, the Wilcoxon Signed Ranks Test is carried out.

### *Univariate Analysis*

Univariate analysis was performed to know picture of the average rate Menstrual pain before being given ginger water decoction and after being given ginger water decoction on reducing dysmenorrhea pain levels in young women in SMAN 03 Bengkulu City namely as follows:

**Table 2.** Description of Average Dysmenorrhoea Pain Levels in SMAN 03 Bengkulu City

<b>Treatment</b>	<b>N</b>	<b>Mean Test</b>
Pretest Group Pain	16	4.38
Posttest Group Pain	16	3.38

Based on Table 2 above, the average Pain value is obtained. For before being given boiled ginger water it was 4.38 and after being given boiled ginger water it was 3.38.

### *Bivariate Analysis*

Bivariate analysis was carried out to determine the effect of giving ginger water decoction to reducing the level of dysmenorrhea pain in young women at SMAN 03 Bengkulu City by using the Wilcoxon Sign Rank test.

**Table 3.** The Effect of Giving Ginger Water Decoction on Reducing Dysmenorrhea Pain Levels in Young Women at SMAN 03 Bengkulu City

<b>Variable</b>	<b>Rank</b>	<b>N</b>	<b>MeanRanking</b>	<b>Z</b>	<b>P</b>
Posttest Pain Levels-Pretest Pain Levels	Negative	16	8.50	-5.856	0.000
	Positive	0	0.0		
	Ties	0			
<b>Total</b>		16			

Based on Table 3 above, it can be seen that the negative ranks or negative difference is 16 with a mean rank value of 8.50, which means that 16 people experienced a decrease in pain levels after giving ginger water decoction. The positive rank results or the positive difference is 0 with a mean rank of 0, meaning that there is no increased pain level after giving ginger water decoction. The results of the ties value or the similarity value is 0, meaning that there are 0 people with the same level of pain before and after being given ginger water decoction.

The results of the Wilcoxon Sign Rank statistical test obtained a value of  $Z = -5.856$  with a p-value = 0.000 <0.05 which means it is significant, then  $H_0$  is rejected and  $H_a$  is accepted. So, there is an effect of giving ginger water decoction to reducing dysmenorrhea pain levels in young women at SMAN 03 Bengkulu City. According to the data analysis's findings, all respondents' pain levels decreased by one level after receiving 200 ml of ginger water for 15 minutes, as indicated by negative ranks or a negative difference of 16 with a mean rank value of 8.50. Of the 16 responders, 7 reported a decrease in pain from moderate (pain scale 4-6) to mild (pain scale 1-3), 6 reported a decrease in pain that was still moderate (pain scale 4-6), and 3 reported a decrease in pain that was still mild (pain scale 1-3). This is due to the limited frequency and influence of the administration of boiled ginger water, which is only administered once in a window of 15 minutes.

According to research results [Ramli & Santy \(2017\)](#) entitled the effectiveness of Giving Ginger Concoction (*Zingibers officinale*) and The Rosella (*Hibiscus sabdariffa*) on Changes in Menstrual Pain Intensity that the longer the ginger concoction is given, the less pain intensity. Giving ginger concoction 3 days before and 3 days during menstruation (for 6 days) within 72 hours is more effective in reducing dysmenorrhea pain levels.

According to Mahon in [Utari \(2017\)](#), each person's experience of pain is unique, subjective, and diverse. Numerous other factors, including psychological ones, which can make pain worse due to a person's mental state, can affect how intensely pain is felt.

The results of the Wilcoxon Sign Rank analysis showed that there was an effect of giving ginger water decoction to reducing the level of dysmenorrhea pain in young women in SMAN 03 Bengkulu City. The results of this study indicate that giving ginger water can reduce pain in female students who suffer from dysmenorrhea because boiled ginger water contains natural analgesics that can relieve dysmenorrhea pain.

Ginger is as effective at reducing pain as the analgesic drugs mefenamic acid and profen mother. Ginger is the choice because it contains a lot of oleoresin. Oleoresin is a bioactive component consisting of gingerols and shogaols which work as anti-inflammatories so that prostaglandins can be blocked or inhibit uterine contractions that cause dysmenorrhea.

The results of this study are in line with the opinion [Mutiara & Pratiwi \(2017\)](#) during menstruation, when there is no fertilization of the ovum after ovulation, the female reproductive hormones drop dramatically because the corpus luteum involutes. This results in all endometrial conditions that have been previously prepared for implantation of fertilization results to shed as well. All glands are shed, there is a decrease in nutrition, and vasospasm of blood vessels in the endometrium. Vasospasm will cause an inflammatory reaction which will activate arachidonic acid metabolism and will eventually release prostaglandins (PG) which will cause primary dysmenorrhea.

The results of this study are in line with research [\(Rahmawati et al., 2016\)](#) entitled The Effect of Giving Red Ginger Stew (*Zingiber Officinale Roscoe*) on Reducing the Intensity of Dysmenorrhea in Level II Young Women at Al-Jihad Islamic Boarding School, shows that MTs Al-Jihad Islamic Boarding School Pontianak Level II Young Women's dysmenorrhea pain before and after receiving red ginger decoction indicates a substantial difference.

#### D. Conclusion

1. Of the 16 respondents, the average pain before being given ginger water was 4.38.
2. Of the 16 respondents, the average pain after being given a decoction of ginger water was 3.38.
3. There is an effect of giving ginger water decoction to reducing the level of dysmenorrhea pain in young women at SMAN 03 Bengkulu City.

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